Factors Influencing Faculty Use of Technology in Online Instruction: A Case Study

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Abstract

Online education has become a staple of higher education institutions. In the latest survey conducted by the Sloan Foundation, it was found that over two-thirds of higher education institutions were offering a variety of online courses and programs. According to Allen and Seaman (2008), over 20% of all students took at least one online course in 2006 and this is projected to continue to increase over time. However, observations at a specific urban university in the mid-west, shows vast variation in terms of faculty who choose to utilize online instructional technologies and a significant lag in desired online development. With the importance of online instruction, the question was asked was "how can an institution encourage their faculty members to move forward with online instruction?" This article outlines the answer to that question by determining what factors were found to influence a faculty member's decision whether or not to integrate online technologies into his or her course. The factors considered centered on areas such as: 1) perceptions of online instruction, 2) past experience with online technologies, and 3) specific experiences at the university. These findings, as well as the initial strategies developed to increase faculty participation in online instruction are discussed in the article.

Introduction

Technology has changed the way instruction is delivered on the campuses of colleges and universities across the United States, especially in terms of online instruction (Lowerison et al., 2006). According to a recent report funded by the Sloan Foundation, Allen and Seaman (2008) found that almost two-thirds of all higher education institutions in the United States offer online courses and/or programs in order to remain competitive with other institutions of higher learning and to fulfill the diverse needs of today's busy students. Based on this, more and more universities are providing faculty with the tools necessary to incorporate technology into the classroom and move their courses into an online environment; however, the decision to integrate any type of technology into coursework usually rests with the faculty who teach the courses (Ertmer, 2005). Many instructors take advantage of the new techniques and opportunities made available through online technologies and use them regularly, while others tend to rely on the more traditional methods of delivering course content.

For example, Professor Green has taught both online and traditional courses for over three years. He incorporates technology into the majority of his coursework: posts student assignments and documents in the course management system (CMS), uses presentation software and Internet resources, where appropriate, to supplement his lectures, and has moved many of his courses entirely online. He also requires students to contact him through email regarding problems and questions. On the other hand, Professor Anderson uses a more traditional method of instruction. He seldom requires students to use technology, uses paper handouts to supplement the lectures, writes concepts on the chalkboard and requests students to contact him by phone to set up appointments for questions and problems.

While these are fictitious scenarios, they mirror the teaching methods used by instructors at many colleges and universities. Observations at an urban university in the mid-west show vast variation in terms of faculty who choose to utilize instructional technology, specifically the course management system. Even though this university has promoted the use of the course management system, offered training and support for its integration, and provided stipends for the development of online courses, the faculty's integration of the course management system has been slow, if not non-existent, in some areas. Therefore, the purpose of this case study was to investigate faculty perceptions of the usefulness and importance of online technologies, the factors that contribute to the decision of a faculty member to use or not to use the online course management system, and the barriers that exist which make the use of online technologies difficult.

To answer these issues a broad review of the literature was the starting point. Articles that investigated technology integration from a variety of viewpoints, such as pre-service teachers, K-12 teachers, and college faculty, were reviewed. This breadth of populations gave insight into a wide variety of factors that influenced individuals' decisions regarding technology integration. This information was used as the basis for a survey that was administered to a random sample of instructors at this urban university in the mid-west. The survey addressed three primary areas: 1) perceived importance of online instruction and programs; 2) perceptions of the usefulness of the course management software utilized at this university; and 3) determination of what factors influence the instructor's decision whether or not to use the course management system. In addition to these three primary areas, demographic information and open-ended questions were used to supplement and enrich the quantitative results.

Literature Review

Even though technology is more available than ever to instructors, many are resistant to incorporating technology into their classrooms. Cuban (1999) states that professors and students at the university level have grown comfortable with e-mail and Web pages, but less than 10 percent of faculty use these technologies for teaching. However, even those instructors who embrace technology still find barriers that inhibit its use in the classroom. In a study by Brill and Galloway (2007), two limitations to the use of technology in instruction were noted: inadequate availability of technology and classrooms that do not adequately support technology. Ultimately, the decision to use technology is up to the instructor. While the examples above illustrate some of the barriers to the use of technology, the question still remains as to what influences a faculty member's decision whether or not to use technology in the classroom.

Fortunately, previous research on this topic provides some valuable insight. Various factors such as feelings, beliefs, attitudes and perceptions have emerged from the literature as

inputs into the decision whether or not to integrate technology into one's teaching. These factors have an outward appearance of complexity and can be confusing. However, when broken into two categories, internal and external factors, trends emerge that make them more understandable.

Internal Factors

The most common internal factors that influence an instructor's decision to incorporate technology in teaching are individual beliefs (Albion & Ertmer, 2002), feelings of anxiety (Dusik, 2000), fears, preferences and perceptions (Grasha & Yangarber-Hicks, 2000) and feelings of competence (Dusik, 2000). Kane, through her assessment of available research, asserts that "teachers' personal beliefs, perceptions, attitudes, and orientations are correlated with [their] teaching practices" (Kane, Sandretto, & Heath, 2002, p. 182). In other words, the decision to incorporate new pedagogy into teaching is attributed to the instructor's feelings about themselves and what they have previously learned. Given this, one can extrapolate that if an instructor has a positive attitude or orientation towards technology they will be more inclined to incorporate it into their teaching.

Another way beliefs factor into the decision whether or not to integrate technology is the the view instructors have towards various teaching practices and styles. Grasha and Hicks (2000, p. 3) found that teaching styles are based on "the needs, emotions, motives, beliefs, and attitudes of the teacher and that these teaching practices, when used positively, are the force behind student success." In addition, Ferguson (2004) builds on this and indicates that teachers' decisions to integrate technology into instruction are based on their teaching styles and strategies. Ferguson's study places faculty into four types based on their use of technology in instruction: first-wave (self-starters), second-wave (traditionalists), third-wave (careerists), and fourth-wave (reluctants). The personal beliefs of each group encourage or hinder the use of technology in instruction. For example, fourth-wave instructors (reluctants) are not enthusiastic when it involves technology integration because this group believes in the "superiority of the traditional models of learning," focusing on a teacher-centered and repetitious model of learning (Ferguson, 2004, p. 136).

These beliefs used to group faculty members are often developed early in their academic career. Albion and Ertmer (2003) explain that teachers' beliefs about technology use are formed "during time spent in the classroom either as teachers or students" (p. 36). Therefore, whether faculty members form their pedagogical beliefs about using technology while they are in school themselves, or after they begin their teaching careers, efforts should be made to improve their interaction with technology early in their careers.

Competency, another internal factor that determines faculty use of technology, is critical in making technology an "organic" part of the learning environment and incompetency is one of the main reasons faculty choose not to incorporate technology in their teaching. In fact, Goral (2000) found that "only ten percent of teachers [feel] 'very well prepared' to use computers and the Internet for classroom instruction" (p. 2). Among the 90% who do not feel well prepared are those who have been in the field for ten or more years. This group may be reluctant to incorporate technology because they lack the technology skills needed. This lack of skills is due mainly to not having been trained or not having technology modeled during their early academic career (Rosenfeld & Martinez-Pons, 2005). Bandura and Schunk (as cited in Ertmer, 2005), "highlight the importance of building teachers' confidence through successful experiences with small instructional changes before attempting larger changes" (p. 33).

Rovai and Childress (2002/2003) found that computer apprehension or anxiety is related to psychological factors which can be helped with the right instruction. They suggest that those who take courses which build self-efficacy and expand their knowledge of computers minimize the anxiety they feel towards integrating technology into actual classroom situations. Christensen (2002) further reports technology anxiety may be reduced if faculty members are taken through training which offers several stages of adoption. It is through these adoption stages instructors increases their confidence and competency levels when integrating technology into coursework.

Therefore, based on the literature, internal factors are important motivating factors in faculty members' use of technology. If attention is paid to faculty members' beliefs, competencies, and comfort with technology, there should be a stronger likelihood that they will integrate technology successfully into their classes. However, the internal variables discussed above are only half of the story. To fully understand the issues surrounding faculty members' decisions whether or not to integrate technology, one has to also consider the external factors.

External Factors

External factors include faculty demographics, specifically age and gender, class size, and institutional support. Demographics such as age and gender may be primary factors that influence whether faculty members use technology (Cooper, 2006, p. 331). In their study, Peluchette and Rust, (2005) state that at the university level, faculty who are in the middle of their careers can either be "allies or stubborn opponents as their institutions adjust to competitive pressures, revise programs to meet the needs of increasingly diverse students, and integrate new educational technologies" (p. 201). Several reasons are provided as to why this may be true. First of all, tenured faculty may not be compelled or motivated to use technology. Secondly, older or senior faculty members may not have the knowledge or training to use technology. This leads to competency issues for older or tenured faculty, as discussed earlier in this study.

Another demographic factor is gender differences. According to Spotts (1997), male faculty members tend to rate their knowledge and use of technology higher than their female counterparts. However, female instructors take factors such as lack of time and lack of professional advancement into consideration when deciding whether or not to integrate technology into the curriculum. Additionally, Lumpe and Chambers (2001) posit from their study that female instructors are more likely to believe that external factors, such as administrators, students, equipment, and professional development, directly influence a person's ability to be successful with technology.

According to Pleuchette(2005), another external factor, class size, can negatively influence technology use. When faculty members use technologies such as email and chat rooms, larger classes can be difficult to manage, especially when teaching an online course. According to Kelly and Maushak (2004), there is no answer to the question of what is the ideal class size, as subject matter as well as the types of assignments instructors use are factors to take into consideration when integrating technology into the curriculum.

Institutional support, the final external factor reviewed, encompasses a wide range of topics including faculty development, ease of access for faculty members who wish to use technology, policies and procedures, and support for technological issues. Osika (2006) explained successful technology programs require support from the entire institution. This

was also reiterated in the Allen and Seaman's study (2008) where those most successful and engaged with supporting instructional technology, especially online technologies, were those institutions that included technology support in their long-term strategic plans.

It is clear that successfully implementing technology, as well as distance learning programs, into the curriculum is a complex issue facing institutions of higher learning. This issue is complicated further by the various factors which influence instructors' use of technology in a classroom setting. To understand the motivation of instructors at the university in this study, the various internal and external factors reviewed above were used as the basis for the investigation.

Method

As schools move to an online environment, many faculty members often try teaching online, and several will continue to do so semester after semester. However, at the university where this study was conducted, faculty use of online technologies, specifically the online CMS, was minimal compared to national averages. Therefore, the purpose of this study was to investigate the specific factors impacting the decisions of instructors to use, or not use, the online CMS in the delivery of course content. The study was conducted at an urban university in the mid-west, with a primarily African-American faculty and student population, by a research team consisting of three faculty members and a graduate assistant.

Overview of Design

This study incorporated standard survey methodologies to gain insight into factors influencing instructors' decisions whether or not to the use online CMS in instruction. Randomly selected participants were surveyed and simple descriptive statistics were conducted to analyze the data. The following describes in detail the procedures used.

Procedure

The procedure used to complete this study was comprised of six primary steps: 1) establishing the roles of research team, 2) survey construction, 3) selection of sample, 4) survey administration, 5) data collection, and 6) data analysis. Each of these sections are discussed in detail below:

Roles of Research Team. The entire team was present to discuss the research design and survey construction; however, to protect the anonymity of participants' responses and to insure the integrity of the survey, the research team divided into two groups: participant identification and data handling. The two members of the team assigned to participant identification were the only ones who knew the actual names of the instructors included in the sample. This team randomly selected the participants, assigned each participant an ID number, handled the initial mailing, sent the reminders, and served as contacts for participants with questions.

The two members of the team assigned to data handling received the completed surveys, entered the data into a spreadsheet, and provided the participant identification team with a list of IDs of those who responded. Once all data collection had been concluded, the data analysis team removed all identifying information from the data and shared it with the entire research team. This separation of roles kept the identity of the respondents anonymous.

The team felt this was important as it provided participants with the freedom to respond honestly without the fear or concern of having their specific comments recognized and tied to them.

Survey Construction. The research team developed a survey instrument to gather information on faculty members' perceptions of the usefulness and importance of online courses and what factors or barriers influence their decision to use technology, specifically online course management tools. The instrument consisted of a four-page questionnaire comprised of 62 questions which were divided into the following five sections: 1) perceptions of importance/validity of distance learning; 2) usage of the online CMS; 3) factors that influence the use or non use of the CMS; 4) general comments and suggestions; and 5) demographics.

The first section regarding the participants' perceptions of the importance and validity of distance learning consisted of five questions to be answered on a five point scale from strongly agree to strongly disagree with a midpoint of neither agree or disagree. These questions focused on the participants' perception of the need for a strong distance learning program for the future success of the university, the quality of distance learning courses compared to traditional face-to-face courses, the ability of distance learning to allow students more flexibility and opportunity to continue their education, and whether or not the university should make distance learning a priority.

The second section queried participants about their personal use of the online CMS and the usefulness of the tools it contained. This section consisted of 19 questions. The first question in this section asked whether or not the participants were currently using the CMS in any of their classes. If not, the participants were instructed to skip to the next section. Those who answered affirmatively were asked if they were using the tool to enhance face-to-face courses with online supplements, to create a hybrid model where instruction was balanced between online and face-to-face modalities, and/or to offer courses completely online with no requirement for face-to-face interaction.
Participants were also asked to indicate the usefulness of the various tools available in the CMS using a four point scale: useful, somewhat useful, not useful, and never used. This was followed by an open-ended question asking if there were things they could not accomplish within the CMS that were needed for their courses. At the end of this section a single question was asked about their overall satisfaction with the CMS, using a five point scale ranging from very satisfied to very dissatisfied with a midpoint of neither satisfied nor dissatisfied.

The third section of the survey consisted of 24 questions focusing on the factors that influenced the participants' use or non-use of the CMS. The questions in this section used a five point scale ranging from strong positive influence to strong negative influence with a midpoint of no influence. The factors used in this section were based on the various internal and external factors identified from the literature. These ranged from questions regarding participants' perception of support and training offered by the Office of Distance Learning, college, and department; perceived need and opinion of distance learning; the challenges, rewards, and preferences involved in teaching online; as well as pressure from students, peers, and administration to move courses online.

The fourth section consisted of five open ended questions regarding the experiences of the participants in using the CMS. Specifically, participants were asked what was helpful or what hindered their use of the CMS, what changes should be made regarding online

courses, and what other suggestions or comments they might have. This open ended section provided the research team with qualitative data which enriched the quantitative responses in the other sections.

Finally, in the last section, participants were asked to provide some general demographic information about themselves: position (e.g. tenured/tenured-tracked, lecturer, etc.), the length of time at the university, the college in which they taught, whether or they had ever been an online student, and their willingness to teach a course entirely online. With this information the research team was able to compare the demographics of the respondents with those of the sample and total populations.

Selection of Sample Participants

The university in this study employed 316 full time instructors, part time lecturers, and tenured and tenured-tracked faculty in the fall 2007 term. The two members of the research team assigned to participant handling used a random selection process to identify 75 participants from the list of instructional staff. This was approximately 25% of the total population. Once the sample was selected, each participant was assigned a random four-digit ID code to provide a confidential method to track participation.

The sample population contained a distribution similar to that of the total population. Table 1, in the next section, shows the demographic distribution of colleges and ranks of the sample population compared to the total population.

Survey Administration

The two members of the research team responsible for participant handling sent each participant a packet containing 1) a letter which described the purpose of the study, the need for participation, options for participating, and instructions for the handling of the survey, 2) a copy of the survey with the assigned four digit ID code affixed, and 3) an envelope in which to return the completed survey. The surveys were returned to the members of the research team responsible for the handling of the data who then recorded the responses in a spreadsheet. The ID codes were recorded in a separate file shared with all members of the research team, so the participant handling team could monitor who had returned the survey.

After two weeks, the participant handling team sent a reminder email, including a link to the online version of the survey, to those who had not responded. After an additional two weeks another letter, including another copy of the survey, was sent as a final reminder to all members of the sample who had not yet responded.

Data Collection

As the surveys were returned to the members of the research team responsible for collection of the data, the data was entered into a spreadsheet and the process of analyzing the data was begun. This process included performing simple descriptive statistics on the data in order to provide a general picture of the faculty's perceptions of distance learning and the factors which influenced their decision to incorporate online technologies into their classroom. A complete discussion of the data analysis is provided in the following section.

Results

Of the 75 members of the randomly selected sample, a total of 36 participated. This provided a final response rate of 48%. The demographics of the participants (See Table 1) were compared to the sample population and the university's total teaching population for the Fall 2007 semester. An over representation of participant responses from the College of Education (28%) as compared to the sample population (11%) was found. This most likely occurred due to the fact that three of the research team members are members of the College of Education, so participants may have felt more obligation to participate than the teaching staff in other colleges.

Table 1
Demographics of Population, Sample, and Participants

Demographic Characteristics	**Total Population**	**Sample Population**	**Participant Population**
College of Arts and Sciences	61%	60%	50%
College of Business	6%	9%	0%
Continuing Education	1%	3%	3%
College of Education	15%	11%	28%
College of Health Sciences	11%	11%	16%
Library	5%	7%	3%
Other	1%	3%	0%
Tenured/Tenured Tracked	76%	77%	82%
Full Time Lecturer	22%	21%	6%
Adjunct / Other	2%	2%	12%

Subsequently, there was an under representation of participant responses from the College of Business (0%) as compared to the sample population (9%). Aside from the fact that the College of Business is the university's smallest college, no other explanation for lack of participation is proposed. Half (50%) of the participant responses were returned from the College of Art and Sciences, the university's largest college. Sixteen percent of responses were from the College of Health Sciences, with the remainder of the survey responses returned from Library Information Services and from non-traditional programs (3%) each.

The majority (50%) of the sample population were faculty members who have been teaching at the university for over 10 years. There was also an over representation of tenured/tenured track faculty (82% returned versus 76% actual). This is believed to have occurred since tenured and tenured-tracked faculty have a tendency to be on campus more frequently and are more sensitive to the importance of response rates in survey research.

Perceived Importance and Validity of Distance Learning Courses

Of faculty who participated in the survey, eighty-six (86%) percent indicated a strong distance learning program was a requirement for the future success of the university and offering of online courses should be a priority (81%). Furthermore, all respondents (100%) agreed that distance learning courses allow students to have more flexible schedules, while 75% felt it allows some students to maintain attendance where they otherwise would not be able; however only 47% percent felt that online courses had similar quality and rigor as

traditional courses. This presents a situation where the majority of faculty strongly believes online courses are needed to stay competitive, but online courses lack quality. This may be one of the primary reasons why many faculty members are hesitant to move their courses online.

Usage of the CMS

Several survey questions explored faculty use of the CMS. Seventy-one percent (71%) of faculty report using the CMS in their classes. Thirty-three (32%) percent of these faculty report having instructed courses completely online while 16% report having taught courses using a balance of online and face-to-face (hybrid) instruction and 84% state they have taught using traditional face-to-face methods along with online supplements (enhanced).

Faculty members were then asked about which features they most commonly used and whether or not they found them useful. Table 2 illustrates faculty members' perceptions of the common tools offered in the CMS.

Faculty use of the CMS components, such as course documents, announcement and assignment features, suggests that there is a relationship between the tools faculty find useful in the CMS with the features that are most often used in traditional face- to- face courses. The high percentage of usefulness could be attributed to faculty familiarity with these tools and their traditional functions. Since faculty members are comfortable using these features, it seems they are more willing to adopt these features in their corresponding digital formats.

Those tools that are typically not available in a traditional classroom, such as online chats, surveys, and glossaries, are those which faculty reported as never used; thus, again, providing evidence that the tools most familiar to instructors in a traditional course are the ones most used online. These findings support the literature presented earlier which attributes faculty member's use of technology to that which has been modeled previously and with which they feel competent.

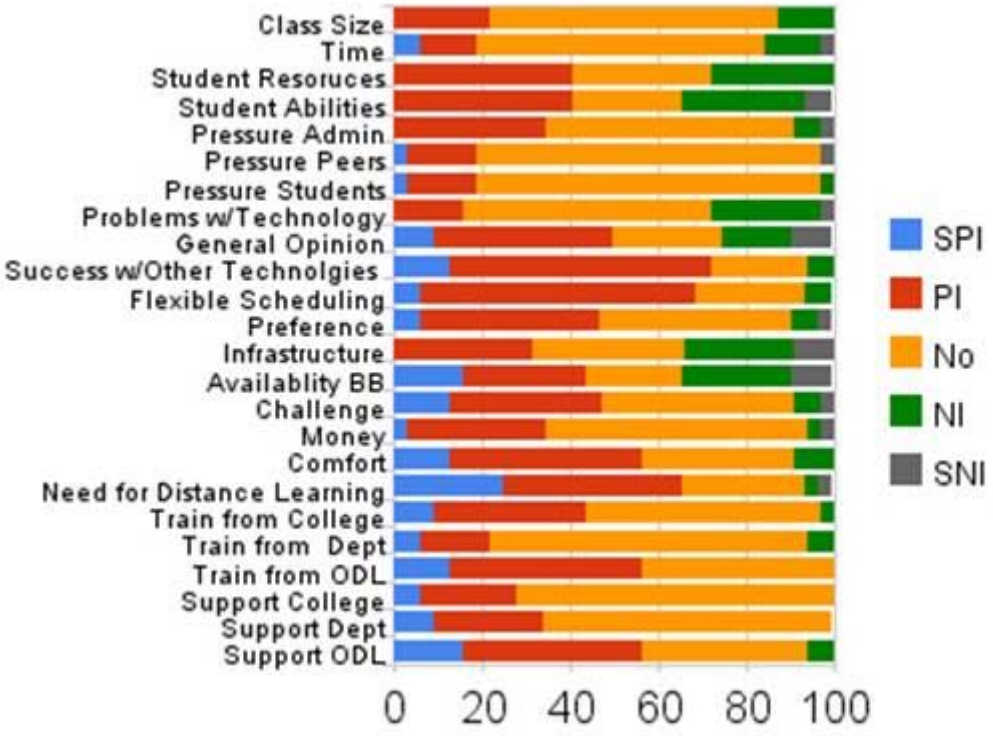
Table 2
Faculty Perceived Usefulness of Features Found in the CMS

Feature	Useful	Somewhat Useful	Not Useful	Never Used
Course Documents	96%	4%	0%	0%
Announcements	88%	8%	0%	4%
Assignments Feature	71%	13%	0%	17%
Gradebook	58%	8%	8%	25%
Discussion Board	50%	13%	0%	38%
Staff Information	33%	21%	4%	42%
Digital Drop Box	29%	21%	4%	46%
Group Pages	29%	13%	0%	58%
Chat	13%	17%	8%	63%
Survey	13%	13%	4%	71%
Glossary	4%	8%	4%	83%

Factors Influencing Usage

Twenty-four factors emerged from the literature review as contributing to an individual's decision whether or not to incorporate technology into his or her classroom. These factors include areas of support and training, comfort in use, monetary rewards, and pressure to use technology from students and colleagues. Table 3 lists the factors included on the survey and illustrate the influence the faculty stated they had on their decision whether or not incorporate the CMS into their classes. Responses on each factor ranged from strong positive influence (SPI), positive influence (PI), no influence (NO), negative influence (NI), and strong negative influence (SNI).

Table 3
Factors Influencing Faculty's Use of the CMS



Overall Influence of Factors on Usage

When looking at the results as a whole, the top three factors influencing faculty's decision to incorporate the CMS into their courses were successes with other technologies (72%), desire for flexibility (69%), and a perception of the need for online courses (66%). On the other hand, the strongest negative influences were issues with infrastructure (34%), student abilities (34%), and problems with technology (28%).

Faculty who are successful using other technologies (email, PowerPoint, word processing tools, etc.) outside of instruction seem to be more inclined to use the CMS in the delivery of course content. Flexibility in scheduling, another key factor that solicited positive responses from participants, allows faculty the freedom to teach at times and locations convenient for them. Another point to consider is that faculty members who perceive a need for online courses are more willing to adopt technology into their pedagogy. Infrastructure issues and

student abilities solicited the same percentage of negative responses from faculty. In regards to student abilities, faculty members are sometimes frustrated by students who cannot efficiently use the CMS, which causes the faculty member to spend considerably more time with these students. This in turn leaves less time to for faculty to learn how to better utilize the CMS themselves. The lack of technological support from the university further compounds this issue. If faculty cannot resolve technological issues in real time, the delivery of online course content becomes more difficult and less attractive to faculty.

Factors Influencing Faculty Who Use Technology

For further analysis, researchers separated the faculty who reported that they currently use the course management system from faculty who reported not using the technology. Among participants who reported using the CMS, the following were rated as being the most positive influences for technology use: past successes with other technologies (80%), the perceived need for distance learning courses (76%), and flexibility in scheduling (68%). Infrastructure (36%), problems with technology (36%) and student abilities (36%), were the most negative influences in faculty decisions to use technology.

These responses reiterate that faculty members who are already comfortable using technologies in other areas of work are more inclined to use technology in online instruction. Furthermore, faculty members who feel there is a need for online courses view flexibility as a positive factor in serving the needs of students who demand more online courses.

Factors Influencing Faculty Who Do Not Use Technology

Factors that emerged from the data as having positive influence on the decisions of faculty who currently do not use technology included desire for flexibility (71%), followed by monetary rewards (43%) and pressure from students (43%). The primary negative influence impacting the decisions of faculty who do not use technology was an overall negative opinion (57%) toward distance learning which can be summarized by the comment " impersonal; no-face-to-face; no discussion; no substitute for being in class."

The data suggest that faculty members who do not use technology perceive flexibility (not having to be on campus to teach classes), monetary rewards, and pressures from peers, administration and students, as positive motivating factors which would make them consider using technology. These are factors that could be used to further help influence faculty to consider using technology. Changing the faculty's overall negative opinion about using technology seems to be the major hurdle to overcome in influencing this group to use the CMS in the delivery of course content.

Discussion and Conclusion

This case study was conducted to investigate faculty perceptions of the usefulness and importance of online courses, the factors that contribute to the decision of a faculty member to use the CMS in their courses, and the barriers that exist which make the use of the CMS difficult. Insight was gained into faculty perceptions of the usefulness of online technologies and the reasons why they may or may not decide to utilize the CMS in the delivery of course content.

The most obvious issue needing to be addressed by this specific university is the perception of the usefulness of online courses. This study showed that even though almost all faculty believe that online courses are needed to stay competitive in the market and to allow students the flexibility needed to stay enrolled and matriculate through their programs, almost half expressed a belief that the quality of online courses is not equivalent to traditional courses. Therefore, in order to increase the number of faculty offering online courses, this institution must focus efforts to demonstrate that the quality and rigor of online courses can be the same, if not greater, than traditionally taught courses.

Some ideas to demonstrate and promote the quality of online courses could include 1) conducting an exemplary course program that highlights the quality of online course and showcases the faculty who have created rigorous online instructional environments for their students; 2) facilitating workshops that outline the criteria for a quality online course which is based on solid research, such as the criteria from Quality Matters (www.qualitymatters.org); and 3) hosting open discussion sessions about the potential and pitfalls of online instruction, which can include panels of faculty and students who have been involved in an online course.

Second, when investigating what factors influenced faculty use of the CMS, it is interesting to note that the factors that positively influenced those who have already incorporated technology are internal factors. These factors, such as past success with other technologies, desire for flexibility, and perceived need for online instruction are strong motivators which aid in an individual's initial decision to use technology.

The university can build upon these factors by ensuring that the technology infrastructure is stable, reliable, and provide an environment where faculty can be successful. In addition, a variety of workshops and seminars, geared at all levels and types of technology use, should be provided. It is important that faculty are comfortable and successful with common technology tools, if they are to expand their use of technology to the CMS.

The final objective of this case study was to determine what barriers keep faculty from using the online CMS. There were several factors indicated including the abilities of the students, problems with technology, infrastructure issues, and the general opinion of online instruction. Many of these factors could be resolved by establishing an informed help desk that could answer and respond to technical issues and problems. In addition, assessment tools, such as READI (www.readi.info), could be made available to students to check whether or not they are prepared for success in online courses. Finally, and most importantly, will be the need to continue to demonstrate the quality and rigor of online courses and the potential impact these courses can have on important issues, such as student enrollments and graduation rates (Allen & Seaman, 2008).

Overall, the results of this case study have provided answers to the three initial research questions. These answers provided the university with some solid data from which to move forward in the development of programs and initiatives that are best suited to meet the faculty's needs and institution's goals.

Limitations and Future Considerations

This study obtained information from a small percentage of faculty members who taught in Fall 2007. While typical of this type of study, a better response rate would have provided a

more thorough picture of faculty perceptions of online technologies and the factors that determine their use. Because the results of the study provided researchers with primarily quantitative data, interviews and focus groups are planned to provide a fuller, richer understanding of the situation and the impact of the various initiatives listed above.

An expanded version of this study, which would include colleges and universities in the surrounding area, would also be useful in order to see if there are responses similar to those obtained from this university. Also, this study could be conducted again in two years, giving an opportunity to determine if the outcome of the proposed programs had a positive influence on the faculty members' decisions to use online course management technologies.

NOTE: The survey used in this study can be viewed online at http://webs.csu.edu/~eosika/facsurvey2008.pdf

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